

Table 1. Statistical summary of water-quality data collected from Rattlesnake Creek near Zenith, Kansas, December 1998 through June 2001

[ft³/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; NTU, nephelometric turbidity units; mg/L, milligrams per liter; CaCO₃, calcium carbonate; *, mean and median values were estimated using a log-probability regression to predict values of data less than the detection limit; col/100 mL, colonies per 100 milliliters of water; --, not calculated or not applicable; µg/L, micrograms per liter; AL, State of Kansas aquatic life support criteria; VI, USEPA recommended criteria for Ecoregion VI; SDWR, Secondary Drinking Water Regulation; MCL, Maximum Contaminant Level; DWEL, Drinking Water Equivalent Level; <, less than; HAL, Health Advisory Level; MCLG, Maximum Contaminant Level Goal; EPA CRC, U.S. Environmental Protection Agency Contact Recreational Criteria; KS CRC, State of Kansas Contact Recreational Criteria]

Water-quality chemical or property (unit of measurement)	Number of samples	Concentration			Water-quality criteria
		Range	Mean	Median	
Physical properties, solids, and sediment					
Instantaneous streamflow (ft ³ /s)	25	3.6–840	130	53	--
Specific conductance (µS/cm)	29	453–9,930	3,560	3,040	--
pH (standard units)	27	7.3–8.8	8.1	8.2	6.5–8.5 (AL)
Water temperature (degrees Celsius)	30	3.4–34.0	19.4	21.2	--
Turbidity (NTU)	24	5.0–480	124	83	9.9 (VI)
Oxygen, dissolved (mg/L)	24	3.1–12.8	9.5	10	5 (AL)
Alkalinity (mg/L as CaCO ₃)	18	91–224	180	190	--
Total organic carbon (mg/L)	10	2.4–17	11	11	--
Total suspended solids (mg/L)	18	14–270	106	80	--
Dissolved solids (mg/L)	18	264–5,460	1,870	1,640	500 (SDWR)
Suspended sediment (mg/L)	10	14–1,820	418	325	--
Major ions					
Calcium, dissolved (mg/L)	18	21–100	73	79	--
Calcium, total (mg/L)	17	22–100	78	83	--
Magnesium, dissolved (mg/L)	18	3.1–35	15	14	--
Magnesium, total (mg/L)	17	3.6–37	16	16	--
Potassium, dissolved (mg/L)	18	3.5–9.3	5.7	5.4	--
Potassium, total (mg/L)	17	4.4–11	6.4	6.1	--
Sodium, dissolved (mg/L)	18	50–1,880	585	466	20 (DWEL)
Sodium, total (mg/L)	17	49–1,940	576	453	--
Chloride, dissolved (mg/L)	18	67–3,000	927	757	860 (AL)
Fluoride, dissolved (mg/L)	18	0.2–0.6	.4	.5	4.0 (MCL)
Silica, dissolved (mg/L)	18	5.1–21	15	15	--
Sulfate, dissolved (mg/L)	18	11–269	104	95	352 (AL)
Bromide, dissolved (mg/L)	7	<0.01–0.36	.12*	.04*	--
Nutrients					
Ammonia plus organic nitrogen (mg/L)	20	0.19–1.1	.50	.50	--
Nitrogen, total organic (mg/L)	20	0.10–2.5	1.2	1.1	2.18 (VI)
Ammonia nitrogen (mg/L)	20	<0.02–0.19	.03*	.01 *	--
Nitrite plus nitrate, dissolved (mg/L)	20	<0.05–2.1	.77*	.74*	--
Nitrite nitrogen (mg/L)	20	<0.01–0.05	.02*	.01*	--
Phosphorus, dissolved (mg/L)	20	<0.05–0.23	.09*	.06*	--
Ortho phosphorus (mg/L)	20	<0.01–0.21	.07*	.03*	--
Phosphorus, total (mg/L)	20	<0.05–0.76	.27*	.22*	.076 (VI)

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Water-quality chemical or property (unit of measurement)	Number of samples	Concentration			Water-quality criteria
		Range	Mean	Median	
Metals					
Aluminum, dissolved (µg/L)	10	not detected	--	--	50 (SDWR)
Aluminum, total (µg/L)	10	188–5,890	2,060	1,730	--
Antimony, dissolved (µg/L)	10	not detected	--	--	6.0 (MCL)
Antimony, total (µg/L)	10	not detected	--	--	--
Arsenic, dissolved (µg/L)	10	1.2–3.7	2.4	2.3	10 (MCL)
Arsenic, total (µg/L)	10	1–5	3	3	--
Barium, dissolved (µg/L)	10	51–205	135	144	2,000 (MCL)
Barium, total (µg/L)	10	<100–253	173*	173*	--
Beryllium, dissolved (µg/L)	10	not detected	--	--	4.0 (MCL)
Beryllium, total (µg/L)	10	<20–68	--	--	--
Cadmium, dissolved (µg/L)	10	not detected	--	--	--
Cadmium, total (µg/L)	10	not detected	--	--	--
Chromium, dissolved (µg/L)	10	not detected	--	--	--
Chromium, total (µg/L)	10	<4–4	2*	2*	--
Cobalt, dissolved (µg/L)	10	not detected	--	--	--
Cobalt, total (µg/L)	10	<2–3	2*	2*	--
Copper, dissolved (µg/L)	10	not detected	--	--	--
Copper, total (µg/L)	10	<1–7	3*	3*	--
Cyanide, dissolved (mg/L)	10	<0.01–0.15	--	--	--
Cyanide, total (mg/L)	10	not detected	--	--	--
Iron, dissolved (µg/L)	18	<50–80	16*	9.8*	300 (SDWR)
Iron, total (µg/L)	18	<155–4,670	1,920*	1,630*	--
Lead, dissolved (µg/L)	10	not detected	--	--	15 (MCL)
Lead, total (µg/L)	10	<4–6	3*	3*	--
Lithium, dissolved (µg/L)	10	5.8–75	27	22	--
Lithium, total (µg/L)	10	7.2–63	30	29	--
Manganese, dissolved (µg/L)	18	<20–120	16*	9*	50 (SDWR)
Manganese, total (µg/L)	18	30–238	114	94	--
Mercury, dissolved (µg/L)	10	not detected	--	--	2.0 (MCL)
Mercury, total (µg/L)	10	not detected	--	--	--
Molybdenum, dissolved (µg/L)	10	not detected	--	--	--
Molybdenum, total (µg/L)	10	1–5	3	3	--
Nickel, dissolved (µg/L)	10	not detected	--	--	--
Nickel, total (µg/L)	10	<1–7	3*	3*	--
Selenium, dissolved (µg/L)	10	not detected	--	--	50 (MCL)
Selenium, total (µg/L)	10	not detected	--	--	--
Silver, dissolved (µg/L)	10	not detected	--	--	100 (MCL)
Silver, total (µg/L)	10	not detected	--	--	--
Strontium, dissolved (µg/L)	10	133–1,140	521	465	--

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Metals—Continued					
Strontium, total ($\mu\text{g/L}$)	10	140–1,150	580	589	--
Vanadium, dissolved ($\mu\text{g/L}$)	10	not detected	--	--	--
Zinc, dissolved ($\mu\text{g/L}$)	10	not detected	--	--	--
Zinc, total ($\mu\text{g/L}$)	10	not detected	--	--	--
Pesticides (dissolved)					
2,6-Diethylaniline ($\mu\text{g/L}$)	9	not detected	--	--	--
Acetochlor ($\mu\text{g/L}$)	9	<0.008–0.005	--	--	--
Alachlor ($\mu\text{g/L}$)	9	<0.01–0.12	--	--	2.0 (MCL)
Atrazine ($\mu\text{g/L}$)	9	0.01–1.5	.37	.15	3.0 (MCL)
Benfluralin ($\mu\text{g/L}$)	9	not detected	--	--	--
Butylate ($\mu\text{g/L}$)	9	not detected	--	--	350 (HAL)
Carbaryl ($\mu\text{g/L}$)	9	not detected	--	--	700 (HAL)
Carbofuran ($\mu\text{g/L}$)	9	not detected	--	--	40 (MCL)
Chlorpyrifos ($\mu\text{g/L}$)	9	not detected	--	--	--
Cyanazine ($\mu\text{g/L}$)	9	not detected	--	--	1.0 (HAL)
Deethylatrazine ($\mu\text{g/L}$)	9	0.01–0.13	.06	.03	--
Diazinon ($\mu\text{g/L}$)	9	not detected	--	--	.600 (HAL)
Dieldrin ($\mu\text{g/L}$)	9	not detected	--	--	--
Disulfoton ($\mu\text{g/L}$)	9	not detected	--	--	--
EPTC ($\mu\text{g/L}$)	9	not detected	--	--	--
Ethalfuralin ($\mu\text{g/L}$)	9	not detected	--	--	--
Ethoprop ($\mu\text{g/L}$)	9	not detected	--	--	--
Fonofox ($\mu\text{g/L}$)	9	not detected	--	--	--
Lindane ($\mu\text{g/L}$)	9	not detected	--	--	--
Linuron ($\mu\text{g/L}$)	9	not detected	--	--	--
Malathion ($\mu\text{g/L}$)	9	<0.005–0.009	--	--	--
Methyl azinphos ($\mu\text{g/L}$)	9	not detected	--	--	--
Methyl parathion ($\mu\text{g/L}$)	9	not detected	--	--	--
Metolachlor ($\mu\text{g/L}$)	9	<0.01–0.87	.12*	.02*	70 (HAL)
Metribuzin ($\mu\text{g/L}$)	9	<0.004–0.150	--	--	100 (HAL)
Molinate ($\mu\text{g/L}$)	9	not detected	--	--	--
Napropamide ($\mu\text{g/L}$)	9	not detected	--	--	--
p,p'DDE ($\mu\text{g/L}$)	9	not detected	--	--	--
Parathion ($\mu\text{g/L}$)	9	not detected	--	--	--
Pebulate ($\mu\text{g/L}$)	9	not detected	--	--	--
Pendimethalin ($\mu\text{g/L}$)	9	not detected	--	--	--
Permethrin ($\mu\text{g/L}$)	9	not detected	--	--	--
Phorate ($\mu\text{g/L}$)	9	not detected	--	--	--
Prometon ($\mu\text{g/L}$)	9	<0.02–1.3	--	--	100 (HAL)

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Pesticides—Continued					
Pronamide ($\mu\text{g/L}$)	9	not detected	--	--	--
Propachlor ($\mu\text{g/L}$)	9	not detected	--	--	90 (HAL)
Propanil ($\mu\text{g/L}$)	9	not detected	--	--	--
Propargite ($\mu\text{g/L}$)	9	not detected	--	--	--
Simazine ($\mu\text{g/L}$)	9	<0.005–0.009	--	--	4.0 (MCL)
Tebuthiuron ($\mu\text{g/L}$)	9	not detected	--	--	500 (HAL)
Terbacil ($\mu\text{g/L}$)	9	not detected	--	--	90 (HAL)
Terbufos ($\mu\text{g/L}$)	9	not detected	--	--	--
Thiobencarb ($\mu\text{g/L}$)	9	not detected	--	--	--
Triallate ($\mu\text{g/L}$)	9	not detected	--	--	--
Triazine ($\mu\text{g/L}$)	18	<0.1–2.0	0.6*	0.3*	--
Trifluralin ($\mu\text{g/L}$)	9	not detected	--	--	5.0 (HAL)
Bacteria					
Total coliform bacteria (col/100 mL)	4	105–43,900	--	--	0 (MCLG)
E. coli bacteria (col/100 mL)	17	13–1,830	360	162	256 (EPA CRC)
Enterococci bacteria (col/100 mL)	3	62–1,550	--	--	--
Fecal coliform bacteria (col/100 mL)	23	7–20,000	1,400	500	200 (KS CRC)
Fecal streptococci bacteria (col/100 mL)	20	<2–4,600	410	170	--